Detailed Claim Listing

The following is a detailed listing of all claims that are, or were, pending in the present application. Please amend claims 32 and 66, as set forth in this detailed listing.

Claims 1-23 (canceled)

24. (previously presented): A composition comprising:

a) a substrate with a surface comprising discrete sites at a density of at least 100 discrete sites per 1 mm^2, said discrete sites comprising wells; and

b) a population of microspheres randomly distributed in said wells, said population comprising at least a first and a second subpopulation, said microspheres comprising a bioactive agent, and wherein said sites can have only a single microsphere.

25. (previously presented): A composition comprising:

a) a substrate with a patterned surface comprising discrete sites, said substrate comprising discrete sites at a density of at least 100 discrete sites per 1 mm^2 ; and

b) a population of microspheres, randomly distributed on said sites, wherein each microsphere comprises a bioactive agent; and

wherein said sites can have only a single microsphere.

26. (previously presented): A composition according to claim 24 or 25 wherein said substrate is a fiber optic bundle.

27. (previously presented): A composition according to claim 24 or 25 wherein said substrate is selected from the group consisting of glass and plastic.

28. (previously presented): A composition according to claim 24 wherein said population of microspheres comprises at least a first and a second subpopulation, wherein the microspheres of said first subpopulation of microspheres are a different size than the microspheres of said second subpopulation.

29. (previously presented): A composition according to claim 24 or 25 wherein said bioactive agent comprises a protein.

30. (previously presented): A composition according to claim 29 wherein said protein is selected from the group consisting of enzymes and antibodies.

31. (previously presented): A composition according to claim 24 or 25 wherein said bioactive agent is a nucleic acid.

32. (currently amended): A composition according to claim 66 ~~wherein said population of microspheres comprises at least a first and a second subpopulation~~, wherein the microspheres of said first subpopulation of microspheres are a different size than the microspheres of said second subpopulation.

33. (previously presented): A composition according to claim 24, 66, 28, or 32 wherein said first and said second subpopulations comprise a first and a second bioactive agent, respectively.

34. (previously presented): The composition according to claim 33, wherein said first and second subpopulations further comprise a first and a second optical signature, respectively.

35. (previously presented): A composition according to claim 34 wherein said at least one of said optical signatures comprises at least one chromophore.

36. (previously presented): A composition according to claim 34 wherein said at least one of said optical signatures comprises at least one fluorescent dye.

37. (previously presented): A composition according to claim 36 wherein said fluorescent dye is entrapped within said microspheres.

38. (previously presented): A composition according to claim 36 wherein said fluorescent dye is attached to said microspheres.

39. (previously presented): A composition according to claim 34 wherein said optical signature comprises at least two fluorescent dyes.

40. (previously presented): A composition according to claim 66 wherein said bioactive agent comprises a protein.

41. (previously presented): A composition according to claim 40 wherein said protein is selected from the group consisting of enzymes and antibodies.

42. (previously presented): A composition according to claim 66 wherein said bioactive agent is a nucleic acid.

43. (previously presented): A composition according to claim 24 or 25 wherein said bead is covalently associated with the well.

44. (previously presented): A composition according to claim 24 or 25 wherein said bead is non-covalently associated with the well.

45. (previously presented): A method of determining the presence of at least a first and second target analyte in a sample comprising:

a) contacting said sample with a composition comprising:

i) a substrate with a patterned surface comprising discrete sites; and

ii) a population of microspheres comprising at least a first and a second subpopulation, wherein said first subpopulation comprises a first bioactive

agent and said second subpopulation comprises a second bioactive agent, wherein said microspheres are randomly distributed on said surface such that said discrete sites contain only one microsphere; and

b) determining the presence of said first and second target analyte.

46. (previously presented): A method according to claim 45 wherein said substrate is a optical fiber bundle and said microspheres are located within wells at a first terminal end of said bundle.

47. (previously presented): A method according to claim 45 further comprising identifying the location of said first and second bioactive agent on said substrate.

48. (previously presented): The method according to claim 45, wherein said discrete sites are wells.

49. (previously presented): The method according to claim 45, wherein said substrate is selected from the group consisting of glass and plastic.

50. (previously presented): A method of making a composition comprising:

a) providing a patterned surface comprising individual sites on a substrate;

b) randomly distributing microspheres on said surface such that said individual sites contain microspheres, wherein said sites can have only a single microsphere, and wherein said microspheres comprise at least a first and a second subpopulation comprising:

i) a first and second bioactive agent, respectively; and

ii) a first and second optical signature, respectively;

c) detecting said first and second optical signatures while said microspheres are distributed on said surface; and

d) correlating the location of at least one individual site on the array with the bioactive agent at that particular site.

51. (previously presented): A method according to claim 50, wherein said distributing comprises serially adding said subpopulations to said sites.

52. (previously presented): A method according to claim 50, wherein said substrate is a fiber optic bundle.

53. (previously presented): A method according to claim 50, wherein said substrate is selected from the group consisting of glass and plastic.

54. (previously presented): A method according to claim 50, wherein said sites are wells.

55. (previously presented): A method according to claim 45 or 50, wherein said bead is covalently attached to the well.

56. (previously presented): A method according to claim 45 or 50, wherein said bead is non-covalently attached to the well.

57. (previously presented): A method according to claim 45 or 50, wherein said bioactive agent is a nucleic acid.

58. (previously presented): A composition according to claim 27 wherein said substrate is glass.

59. (previously presented): A composition according to claim 27 wherein said substrate is plastic.

60. (previously presented): A composition according to claim 30 wherein said protein is an enzyme.

61. (previously presented): A composition according to claim 30 wherein said protein is an antibody.

62. (previously presented): A composition according to claim 41 wherein said protein is an enzyme.

63. (previously presented): A composition according to claim 41 wherein said protein is an antibody.

64. (previously presented): A method according to claim 49 or 53 wherein said substrate is glass.

65. (previously presented): A method according to claim 49 or 53 wherein said substrate is plastic.

66. (currently amended): A ~~method~~composition according to claim 25, wherein said population of microspheres comprises at least a first and a second subpopulation.

67. (previously presented): A method according to claim 45 or 50 when said bioactive agent is a protein.